

NEW FLIES OF THE GENUS *SARCOPHAGA* FROM GUAM AND THE PHILIPPINES.

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This paper, containing descriptions of four new species of *Sarcophaga*, is based on material from the Philippine Islands and Guam belonging to the United States National Museum.

SARCOPHAGA SUBTUBEROSA, new species.

Holotype.—Male, United States National Museum (No. 21497). Bears number 1255; collector, D. T. Fulloway, Guam.

Allotype.—Female, United States National Museum (No. 21497). No record number; collector, D. T. Fulloway; Guam.

Paratypes.—United States National Museum, one male, four females.

Length.—8 to 12 mm.

(*Male*) *Head*.—Viewed from side parafrontals and genae with dark reflections, not intensified on transverse impression. Breadth of front at narrowest part varies from slightly less to slightly greater than one-half eye width; cheek height approximately one third that of eye. Front prominent; frontal vitta at narrowest part of front nearly or fully twice as wide as each parafrontal, its sides parallel or slightly converging backward. Second antennal segment dark; third about twice length of second; arista plumose to beyond middle. Back of head somewhat convex, with one row of black cilia behind eyes, otherwise clothed with whitish or yellowish-white hair that completely covers metacephalon and extends on to posterior part of cheek. Anterior part of latter clothed with black hair. Gena with a row of hairs near lower eye orbit; other hairs, if present, very minute. Palpi dark.

Chaetotaxy.—Lateral verticals absent; vibrissae inserted just above line of oral margin; each row of frontals extends below base of vitta and diverges from inner edge of gena.

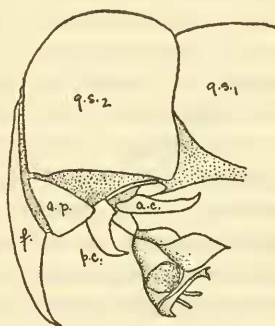


FIG. 1.—*SARCOPHAGA SUBTUBEROSA*. a. c., ANTERIOR CLASPERS; a. p., ACCESSORY PLATE; f., FORCEPS; g. s. 1, FIRST GENITAL SEGMENT; g. s. 2, SECOND GENITAL SEGMENT; p. c., POSTERIOR CLASPERS.

Thorax.—Mesonotum clothed with rather short, reclinate bristles. Hairs covering anterior spiracle light yellowish except at very base; those of anterior margin of posterior spiracle mostly dark brownish but faintly lighter at very tips; those of spiracular cover light yellowish throughout.

Wings.—Bend of fourth vein a right or very slightly acute angle; anterior cross-vein more basal than end of first longitudinal; third vein bristly; costal spine vestigial; section III of costa about one and one half times section V; alulae fringed with hair; calypters whitish, margins fringed with whitish hair.

Legs.—Dark. Posterior femur clothed beneath with fine hairs that do not become longer and beard-like posteriorly; anterior face with three rows of bristles, those of intermediate row shortest and absent distally; posterior face without ventral row of bristles; tibia straight or slightly curved, only the posterior face with a weak beard of long, coarse hairs on distal two-thirds to three-fourths; tarsus not shorter than the tibia. Middle femur clothed beneath on posterior, proximal half with beard-like growth of long hairs; anterior ventral row of short bristles complete, posterior row represented by "comb" only, which extends back to the long hairs: submesotibial bristle present. Ventral surface of anterior coxa with an irregular row of bristles at each side only.

Chaetotaxy.—Anterior dorsocentrals not weaker than anterior postsuturals and longer than vestiture of prescutum; acrostichals absent; inner presuturals very weak: last two pairs of posterior dorsocentrals much the stronger, anterior to these two or three pairs scarcely longer than vestiture of scutum; prescutellar acrostichals present; scutellar apicals present; three sternopleurals; lower sternopleura with a single row of bristles, otherwise clothed with hair.

Abdomen.—Somewhat conical or slightly oval, clothed above with short, reclinate bristles, beneath with longer, more erect hair that becomes much longer on fourth notum. Vestiture of fourth ventral plate very short and strongly reclinate or decumbent.

Chaetotaxy.—Second segment without marginal bristles; third with two, and with two or three laterals on each side; fourth with a complete row ending ventrally in long hairs.

Genital segments.—Not prominent, usually only second segment and membranous band between it and first showing, ground color usually black or blackish but sometimes brownish. First, sometimes faintly grayish pollinose, in profile slightly arched, marginal bristles absent; second, rotund, very slightly flattened, vestiture slightly longer than that of first; anal area small. Forceps black or blackish, base with long, slightly curly hairs a little longer than vestiture of second segment; prongs approximated for about half their length, tips bare. Connecting membrane, on each side just anterior to "humps," with a row of long hairs.

Genitalia.—Similar to those of *S. tuberosa* Pandellé, *S. sarracenioides* Aldrich, etc. Accessory plates hairy. Fifth ventral plate not distinguishable from that of *S. harpax* Pandellé; base with sharply angular median ridge, in profile its posterior extremity not upturned; lamellae expanded, their inner edges with prominent fringe of bristles.

Female.—These differ from males in the following important characters:

Head.—Breadth of front at its narrowest part equal to or slightly less than eye width. Frontal vitta a little wider than each parafrontal.

Thorax.—Vestiture of scutellum very short, strongly reclinate.

Legs.—Posterior trochanter with slender, apical bristle; bristles of intermediate row of anterior face of femur lacking or a few scarcely differentiated bristles proximally; posterior face usually with two ventral, proximal bristles. Middle femur with complete posterior ventral row of short bristles, "comb" not differentiated.

Chaetotaxy.—Three or four sternopleurals, rarely five.

Abdomen.—Oval; vestiture throughout of short reclinate bristles except that of ventral surface of fourth notum, which is erect and hairy.

Genital segments.—Not protuberant, not visible from above. First segment not divided into two lateral lips but often very slightly carinated (anterio-posteriorly) along the mid-dorsal line, ground color varies from that of abdomen (blackish) to orange brown; often with same pollinose colors as abdomen; spiracles central, but usually concealed by edge of fourth notum. Fifth and sixth ventral plates fused, wider than fourth; fifth usually grayish pollinose, much broader than long, its posterior margin with a few bristles (one or two) at each side; the heavily chitinized portion of sixth polished, consisting of a short, anterior part and two rounded posterior lobes (one on each half), each lobe with apical bristles.

Described from three male and eight female specimens.

Range.—Guam, Philippine Islands.

This fly is of interest primarily as a subspecies of *Sarcophaga tuberosa* Pandellé. It is at once distinguished from other described subspecies by the presence of but a single row of black cilia behind the eyes and the white vestiture on the posterior portion of the cheek. All other subspecies known have three rows of black cilia and the cheek vestiture black. The tip of the forceps prongs of *subtuberosa* are attenuated. At least another subspecies, *S. tuberosa harpax* Pandellé occurs in the Orient.¹ A male and female were included in the material from the Philippines.

¹ Böttcher (Ent. Mitt., vol. 1, 1912, p. 164) reports it from Formosa.

S. subtuberosa is also interesting as an apparent link connecting the *tuberosa* and *haemorrhoidalis* groups of Böttcher.¹ The penis and genital segments are similar to those of the *tuberosa* subspecies of the *tuberosa* group and the fifth ventral plate is like that of *harpax* and *tuberosa*. The single row of black cilia behind the eyes, the white vestiture on the posterior portion of the cheek, and the undivided nature of the first genital segment of the female all suggest the *haemorrhoidalis* group (*S. haemorrhoidalis* Fallen, *S. ruficornis* Wiedemann, *S. fulculata* Pandellé, *S. securifera* Villeneuve, etc.)

Three of the female paratypes are from the Philippine Islands, two bear the accession number 1312 (B. Arce, collector), and the other 1306. The allotype is also from the Philippines and is labeled "Acc. No. Bur. Agr. P. I." The remaining female paratypes are from Guam (collector D. T. Fulloway). Females from the Philippines have the first genital segment a dull brownish orange (possibly due to imperfectly hardened reared material), those from Guam have this segment deep brown or blackish.

SARCOPHAGA CRINITA, new species.

Holotype.—Male, United States National Museum (No. 21498). Acc. No. 1537; collector, B. Arce; Philippine Islands.

Allotype.—Female, United States National Museum (No. 21498). Acc. No. 1431; collector, B. Arce; Philippine Islands.

Paratype.—United States National Museum, one male.

Length.—9–10 mm.

Male, head.—Viewed from side parafrontals and genae with dark reflections, transverse impression with a brownish tinge. Breadth of front at narrowest part about three-sevenths that of eye (exactly in three specimens measured); cheek height approximately one-fifth that of eye. Front prominent; frontal vitta at narrowest part of front about twice as wide as each parafrontal, its sides very slightly converging backward. Second antennal segment dark; third about three times length of second; arista plumose on basal half or slightly more. Back of head almost flat or somewhat convex, with three rows of black cilia behind eye, otherwise clothed with silvery-white hair that completely covers metacephalon. Cheek vestiture black except possibly for a few scattered white hairs posteriorly. Gena with a row of bristly hairs near lower eye orbit, other hairs if present very minute. Palpi dark.

Chaetotaxy.—Lateral verticals absent; vibrissae inserted on line with oral margin; each row of frontals extends below base of vitta and diverges from inner edge of gena.

Thorax.—Mesanotum clothed with rather short, reclinate bristles. Hairs covering anterior spiracle dark brown or blackish, though sometimes faintly light colored at tips; those of anterior margin of

¹ Deutsch. Ent. Zeitschr., 1912.

posterior spiracle dark brown or blackish; those of spiracular cover dark colored, sometimes faintly yellowish at tips forming a narrow, yellow border.

Wings.—Bend of fourth vein a right or a very slightly acute angle; anterior cross-vein slightly more basal than end of first longitudinal; third vein bristly (about two-thirds or three-fourths of distance to anterior cross vein); costal spine vestigial; section III of costa equal to or slightly greater than section V; alulae fringed with hair; calypters whitish, margins fringed with white hair.

Legs.—Dark. Posterior femur clothed beneath with short hairs; anterior face with three rows of bristles, those of intermediate row shortest, weak and absent distally, those of lower row few and scattered; posterior ventral row of bristles present on proximal half only: tibia straight or slightly curved, beards absent: tarsus approximately same length as tibia. Middle femur with short, scattered hairs beneath; anterior and posterior ventral rows of bristles complete, bristles of their distal halves weak and inconspicuous, "comb" not developed: submesotibial bristle present. Ventral surface of anterior coxa with an irregular row of bristles at each side only.

Chaetotaxy.—Dorsocentrals strongly reclinate. Anterior dorsocentrals quite long, slightly longer than anterior pairs of postsuturals; acrostichals present; inner presuturals absent: four pairs posterior dorsocentrals, the two anterior pairs much the weaker though considerably longer than vestiture of scutum; praescutellar acrostichals present; scutellar apicals present: three sternopleurals: lower sternopleura with bristles only.

Abdomen.—Somewhat conical or slightly oval, clothed above with short, reclinate bristles, beneath with longer, more erect hair that does not become longer on fourth notum. Vestiture of fourth ventral plate shortest and strongly reclinate or decumbent.

Chaetotaxy.—Second segment without marginal bristles; third with two; fourth with complete row.

Genital segments.—Not prominent, usually only second segment and membranous band between it and first showing. First, ground color, brownish, faintly grayish pollinose, in profile slightly arched, marginal bristles absent, vestiture short and sparse: second, very noticeably flattened, blackish, vestiture longer than that of first; anal area small and extending above middle of posterior surface. Forceps black or blackish, base without upward flap-like extensions or at most these are short and inconspicuous, vestiture shorter than that of second segment; prongs approximated for about two-thirds their length, then separated and bent prominently forward, each tip with a minute tooth.

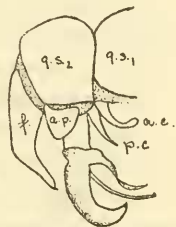


FIG. 2.—SARCOPHAGA CRINITA. (SAME LETTERING AS IN FIG. 1.)

Genitalia.—Accessory plates subtriangular, hairy. Fifth ventral plate concealed in specimens examined by overlapping of ventral edges of fourth notum. Claspers short and slender; anterior pair curved forward and slightly expanded at very tip.

Female.—These differ from males in the following important characters:

Head.—Breadth of front at its narrowest part slightly greater than one-half eye width. Frontal vitta equal to or slightly wider than each parafrontal.

Legs.—Intermediate row of bristles of anterior face of posterior femur at most represented by a few slender, weak bristles proximally.

Abdomen.—Oval; vestiture throughout of short, reclinate bristles.

Genital segments.—Not protuberant, not visible from above. First genital segment divided into two lateral lips, ground color, black or blackish and more or less grayish pollinose.

Described from three male and two female specimens.

Range.—Philippine Islands.

In all three male specimens examined the lower row of bristles of the anterior face of the third femur consisted of four bristles, two near the center and one distal and one proximal to these that were farther from the central bristles than these were from each other.

SARCOPHAGA ORIENTALIS, new species.

Holotype.—Male, United States National Museum (No. 21499).

Length.—14 mm.

Male, head.—Viewed from side parafrontals and genae with dark reflections, not intensified on transverse impression. Breadth of front at narrowest part about one-half eye width; cheek height approximately one-third that of eye. Front prominent; frontal vitta at narrowest part of front about same width as each parafrontal, its sides slightly converging backward and the margins somewhat effaced below ocellar triangle. Second antennal segment dark; third at least twice length of second; arista plumose to beyond middle. Back of head slightly convex, with three rows of black cilia behind eyes, otherwise clothed with whitish hair that completely covers metacephalon. Cheek vestiture black. Gena with row of short hairs close to lower eye orbit, continued as very minute hairs up on to parafrontals. Palpi dark.

Chaetotaxy.—Lateral verticals present; vibrissae inserted on line with oral margins; each row of frontals extends below base of vitta and diverges slightly from inner edge of gena.

Thorax.—Mesanotum clothed with short reclinate bristles. Hairs covering anterior and posterior spiracles dark except at tips.

Wings.—Bend of fourth vein a slightly acute angle; anterior cross-vein nearer end of first than end of second longitudinal; third vein

bristly; costal spine vestigial; section III of costa slightly greater than section V; calypters whitish, margins fringed with whitish hair.

Legs.—Dark. Posterior femur clothed beneath with long, fine hairs, that become longer and beard-like posteriorly; anterior face with well-developed upper and intermediate rows of bristles, lower row represented by only two bristles at distal end and with longer, slender, bristle-like hairs proximal to them; posterior face without ventral row of bristles: tibia with long, well developed anterior and posterior beards, latter the longer and more dense; anterior face with a single slender, median bristle (besides those near median dorsal ridge) on distal portion: tarsus not shorter than tibia. Middle femur clothed beneath on posterior, proximal half with pronounced beard-like growth of long hairs; anterior, ventral row of short bristles present only on distal half, posterior row represented only by strong "comb": tibia clothed beneath on distal half with long hair that tends to become beard-like anteriorly and posteriorly; submeso-tibial bristle absent. Ventral surface of anterior coxa with a row of bristles at each side only.

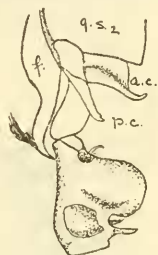


FIG. 3.—SARCOPHAGA ORIENTALIS.
(SAME LETTERING
AS IN FIG. 1.)

Chaetotaxy.—Anterior dorsocentrals short, but longer than vestiture of praescutum; acrostichals and inner presuturals absent: only last two pairs postsutural dorsocentrals well developed; prescutellar acrostichals present: scutellar apicals present: three sternopleurals, strong: lower sternopleura with long bristle-like hair.

Abdomen.—Clothed above with short reclinate bristles, beneath with longer erect hairs that become still longer on fourth notum.

Chaetotaxy.—Second segment without dorsal, marginal bristles; third with two dorsal and on each side two lateral.

Genital segments.—Second segment shining black, first dull and brownish. First, in profile slightly arched, marginal bristles absent, vestiture shorter and finer than on second; second, rotund, slightly flattened, vestiture on center long and somewhat bristle-like, anal area small. Forceps black, separated from slightly beyond base, tips bent forward and a little convergent; base with long, fine hairs; at forward bend near tip of prongs each with a tuft of prominent bristles (see in profile).

Genitalia.—Claspers blackish, anterior pair very broad. Distal portion of penis brownish, with very large, lateral, chitinous processes extending anteriorly.

Described from one male specimen collected by B. Arce and bearing label, "Acc. No. 1317, Bur. Agr. P. I."

Range.—Philippine Islands.

The parafrontals, genae, and posterior eye orbits are golden pinollose. The abdomen of the type-specimen is so distorted that

the ventral plates can not be seen. The genital segments are mounted on a cardboard point and pinned with the specimen.

SARCOPHAGA KNABI, new species.

Holotype.—Male, United States National Museum (No. 21500).

Paratype.—United States National Museum (No. 21500), one male.

Length.—10–12 mm.

Male, head.—Parafrontals and genae dull brassy to bright golden pollinose, also posterior eye orbits. Breadth of front at narrowest part slightly more than one-half eye width; cheek height approximately two-fifths that of eye. Front not prominent; frontal vitta at narrowest part of front about twice width of each parafrontal, its sides slightly converging backward. Second antennal segment dark; third about twice length of second; arista plumose to beyond middle. Back of head somewhat convex, with one row of black cilia behind eyes, otherwise clothed with whitish, yellowish hair that completely covers metacephalon. Cheek clothed with whitish or yellowish hairs. Gena with row of small hairs close to lower eye orbit. Palpi dark.

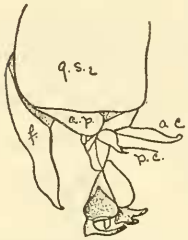


FIG. 4.—*SARCOPHAGA KNABI*. (SAME LETTERING AS IN FIG. 1.)

Chaetotaxy.—Lateral verticals may be weakly developed; vibrissae inserted on line with oral margin; each row of frontals scarcely if at all extending below base of vitta, the lowermost pairs a little divergent.

Thorax.—Mesonotum clothed with short reclinate bristles. Spicular cover very light colored.

Wings.—Bend of fourth vein a right or slightly acute angle; anterior cross-vein under middle of section III of costa; latter equal to at least sections V and VI; third vein bristly; costal spine vestigial; calypters whitish, margins fringed with white hair.

Legs.—Dark. Posterior femur clothed beneath with short, fine hair that ends posteriorly in a row of bristle-like hairs; upper row of bristles of anterior face complete, intermediate row represented by a few bristles centrally, lower row of short, well separated bristles; tibia with anterior and posterior beards of long, slender hairs, latter somewhat the stronger; anterior face without bristles (except near median dorsal ridge); tarsus shorter than tibia. Middle femur clothed beneath with short, fine hair; anterior, ventral row of short bristles complete, posterior row represented only by "comb"; sub-mesotibial bristle present; anterior coxa with irregular row of bristles at each side only.

Chaetotaxy.—Anterior dorsocentrals weak, about as strong as anterior postsuturals; acrostichals and inner presuturals absent; only last two pairs posterior dorsocentrals strong, anterior to these

two or three very weak pairs (probably two usually); prescutellar acrostichals present; scutellar apicals present; three sternopleurals; lower sternopleura with bristles and bristle-like hairs.

Abdomen.—Clothed above with short, reclinate bristles, beneath with slightly longer more erect hair. Vestiture of fourth ventral plate short and decumbent. Fifth ventral plate divided, basal portion ridged.

Chaetotaxy.—Second segment without marginal bristles, third with two and with two laterals on each side, fourth with complete row ending ventrally in long hairs.

Genital segments.—First dark pollinose (not normally visible); second blackish or brownish, subshining. Second, slightly flattened, vestiture of fine hair and shorter than that of base of forceps. Forceps-prongs shining, brownish, and becoming blackish toward tips, each of latter ending in a small, claw-like tooth directed forward; base clothed with long, dense hair.

Described from two male specimens.

Range.—Philippine Islands.

The holotype bears the following label: "Acc. No. 108, Bur. Agr., P. I.," the paratype, "Acc. No. 136, Bur. Agr., P. I."

Among the material examined is one female specimen which may be the female of this species and bears the label, "Probably female of *Sarcophaga knabi* R. Pkr." The original label reads as follows: "Acc. No. 146, Bur. Agr., P. I."

Among the described species included in the lot from the Philippines were a male and female, probably of *Sarcophaga ruficornis* Wiedemann. a male and female of *S. tuberosa harpax* Pandellé, and a male of *S. orchidea* Böttcher. *S. ruficornis* has been known only from India; and, since no figure of the genital segments now exists in the literature, one presented in this paper (fig. 5). *S. orchidea* was described from Formosa.

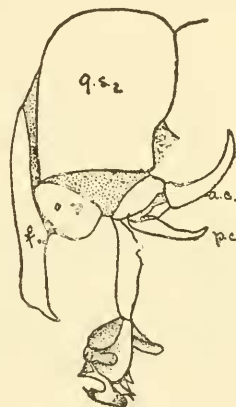


FIG. 5.—*SARCOPHAGA RUFICORNIS*. (SAME LETTERING AS IN FIG. 1.)